SERVICE MANUAL
for

BOSCH
Speed Microwave Ovens

HMC80151UC

HMC80251UC

HMC87151UC

This manual contains information that is necessary for servicing the following Bosch Speed Microwave Ovens:

HMC80151UC; HMC80251UC; HMC87151UC

This manual is designed to be used by qualified service personnel only. Due to the complexity and the risk of high-voltage electrical shock, Bosch does not recommend that customers service their own units.

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1 SAFETY

1.1 Danger

Repairs may be carried out by an electrician only!

Improper repairs may endanger and injure the user!

To prevent electric shocks, always comply with the following information:

• If the appliance is faulty, the housing and frame may be live!

• Do not touch any modules in the appliance, even modules can be live!

• Before commencing repairs, always disconnect the appliance from the power supply!

• If tests have to be performed while the appliance is live, always use a residual-current-operated circuit-breaker!

• The protective conductor connection must not exceed the standard values! This connection is extremely important for personal safety and function of the appliance!

• When repairs are complete, conduct a test in accordance with VDE 0701 or national regulations!

• When repairs are complete, conduct a function test!

• When repairs are complete, conduct a leak rate test!

1.2 Caution!

Always comply with the following instructions to prevent damage to the appliance or to components:

• Comply with ESD instructions!

• Never attempt repairs by randomly replacing components!

• Always proceed systematically and follow the troubleshooting instructions!

• Do not test the high-voltage circuit while the appliance is running – Danger of death -!

• Always discharge the high-voltage capacitor before testing!

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1.3 Leak test (leak detection measurement)

The leak rate is the microwave energy which escapes despite the intact sealing systems.

The leak rate is measured as an energy density with suitable measuring instruments at a distance of 5 cm. The unit of measurement is mW/cm^2.

The limiting values for the permitted measured values, as well as the measurement conditions, have been specified in the VDE regulation 0700/Part 25 and are as follows:

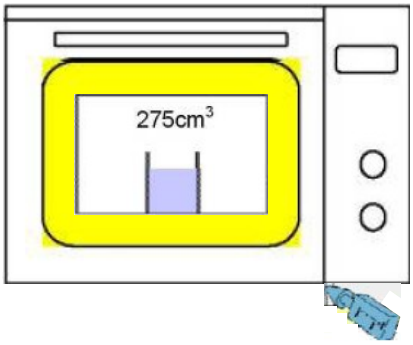
1.3.1 Normal operation with load

Setting: maximum power setting of the appliance

Load: 275 cm^3 water

Permitted limiting value: 5 mW/cm^2

Measurement distance: 5 cm



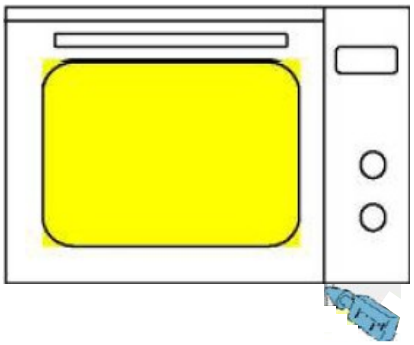
1.3.2 Abnormal operation (no-load operation)

Setting: maximum power setting of the appliance

Load: none (no-load operation)

Permitted limiting value: 10 mW/cm^2

Measurement distance: 5 cm



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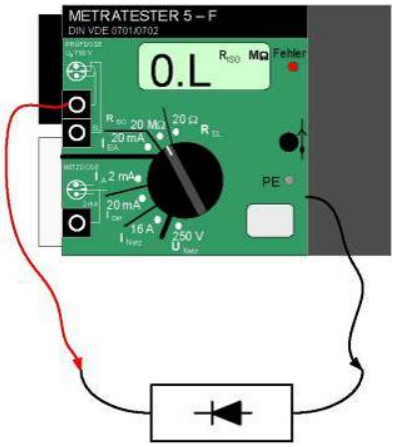
2 COMPONENTS

2.1 High-voltage diode

The high-voltage diode can be tested like a standard diode.
Use an EHG tester for this.

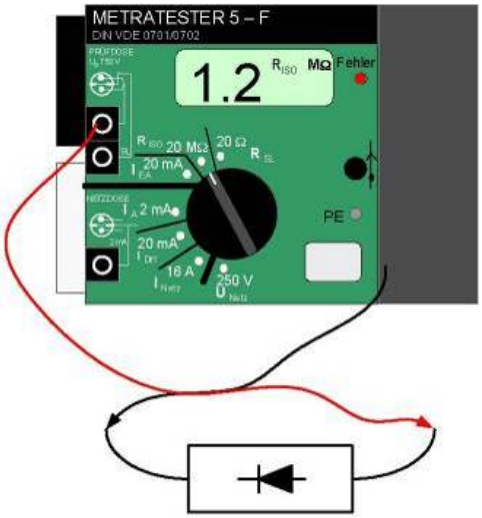
- Full continuity in conducting direction.
- Infinite in blocking direction.

Set to insulation resistance.
Conducting direction = full continuity.



Set to insulation resistance.

Blocking direction = infinite.



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2.2 High-voltage capacitor

The high-voltage capacitor can be tested by ‘ohmic’ measurement’ (resistance measurement range 20 MΩ).

A correctly functioning capacitor indicates transient continuity.

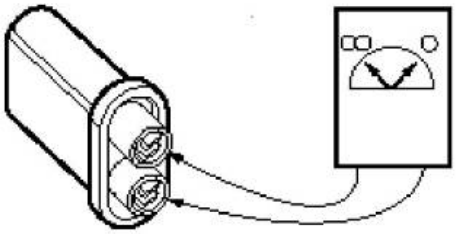
The resistance then increases proportionally with the load.

A defective capacitor (e.g. short-circuit) indicates permanent continuity.

The measuring instrument must indicate infinitely between the connection and housing.

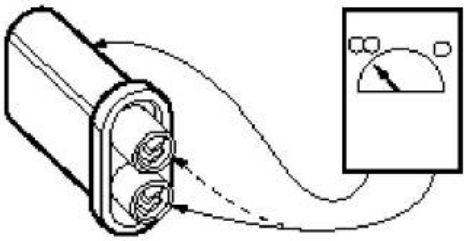
Resistance measurement range 20 MΩ

Briefly continuity.
Then proportional increase of the resistance.



Resistance measurement range 20 MΩ

Between connection and housing = infinite.



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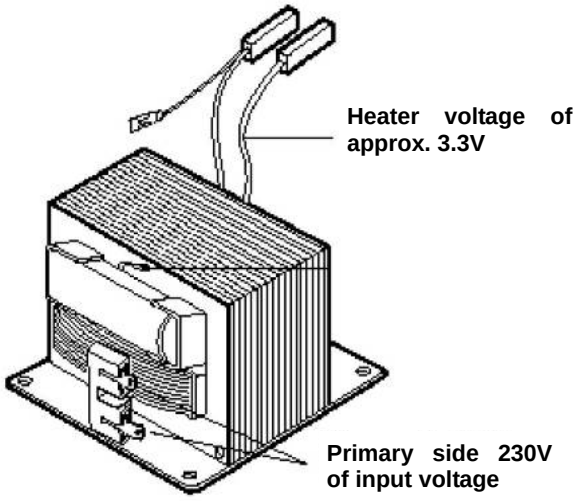
2.3 High-voltage transformer

This transformer supplies the heater voltage for the magnetron and the operating voltage for doubling the voltage.

- Input voltage 230 V
- Heater voltage approx. 3.3 V
- Operating voltage approx. 2300 V

The operating voltage cannot be measured!!



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2.4 Magnetron

The magnetron can be tested by ‘ohmic’ measurement´ only.

The volume resistance of the terminals F and FA should be less than 1 Ω.

The insulation resistance between the two terminals and the housing should be infinite.

Measure the resistance with an EHG tester.

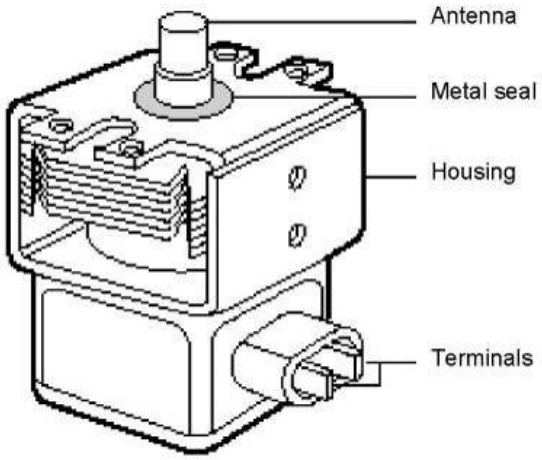
Note:

An internal flashover (short-circuit between cathode and anode) cannot usually be established by taking a measurement.

This is not indicated until the appliance is switched on when high voltage is applied to the magnetron.

It may also be possible to detect the fault by loud humming noises.

Before installing the magnetron, ensure that the metal seal is ok and is seated correctly.



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2.5 Safety switches

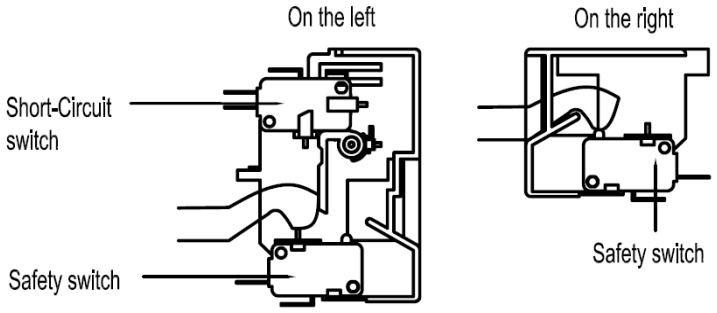
Microwave ovens usually feature at least three safety switches.

These switches are supported by the switch brackets.

The basic function of these switches is to interrupt microwave generation as soon as the door is opened.

One of the three switches is the short-circuit switch. It monitors one of the two other switches and actuates the appliance safety device if the monitored switch does not function.

In this case the appliance is disconnected from the power supply and can no longer be switched on.



4.5.1 Switching sequence

Each door switch independently switches off the power supply for the microwave oven when the door is opened.

The switching sequence is specified by the arrangement and is as follows.

Switching sequence	Open door	Close door
1.)	Safety switch on right	Short-circuit switch
2.)	Safety switch on left	Safety switch on left
3.)	Short-circuit switch	Safety switch on right

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3 REPAIR

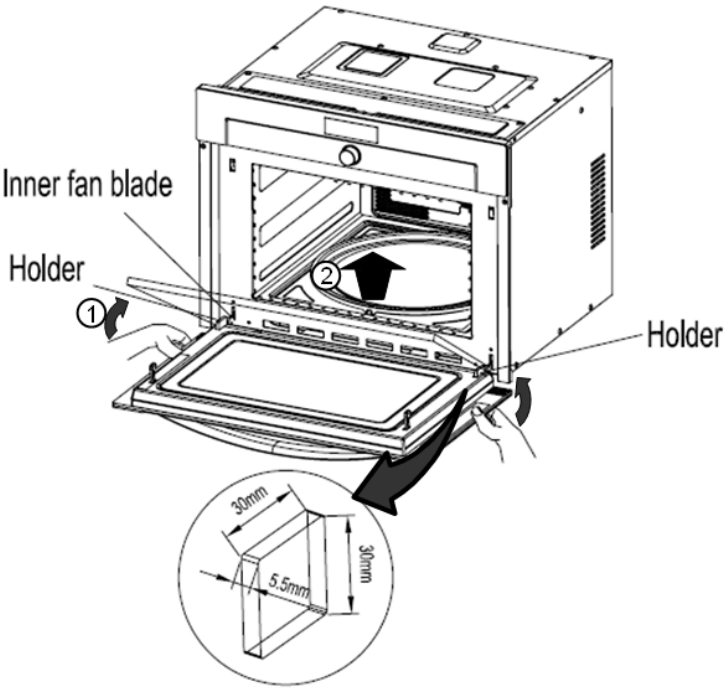
3.1 Removing the door

1. Open the door and insert the "HOLDERS" into the recesses in front of the hinges. Part # 10000699

2. Carefully close the door and lift out of the hinge thrust bearings.

NOTE:

After re-installing the door, ensure that the safety switches function normally.



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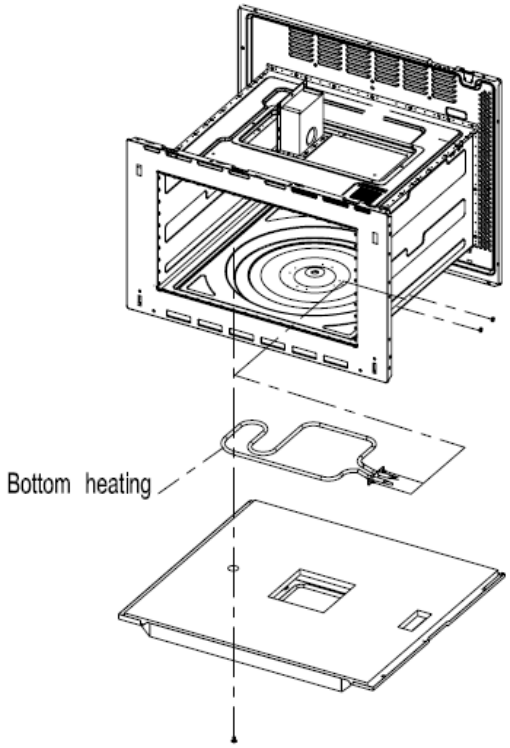
3.2 Removing the bottom heating system

1. Remove the housing.
2. Discharge the HV capacitor.
3. Take the turntable out of the appliance.
4. Disconnect the heating system.
5. Unscrew the heating system on the bottom and right.
6. Slide the heating system to the right and then lift out of the appliance.



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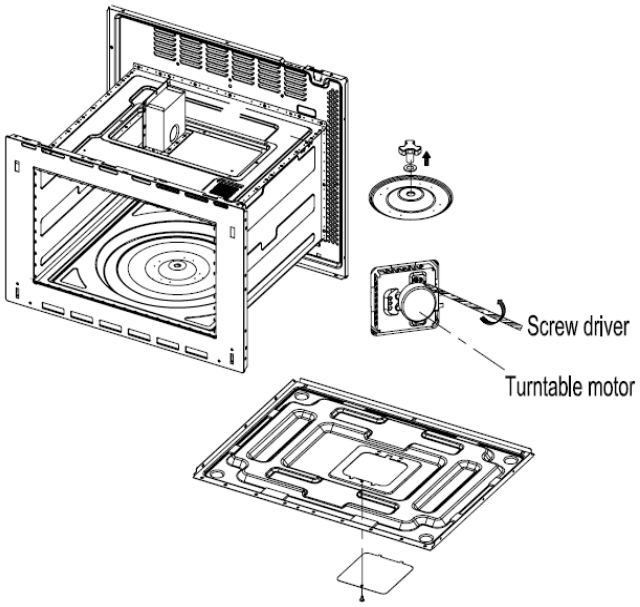
3.3 Removing the turntable motor

1. Take the metal plate out of the appliance.
2. VERY CAREFULLY prise out the turntable shaft with a flat screwdriver.
3. Place the appliance on its back.
4. Remove the cover from the turntable motor.

This cover has been punched into the base plate. It can easily be removed with side cutters.

5. Disconnect the turntable motor.
6. Remove the screws which attach the turntable motor to the cooking compartment.
7. After repairing or replacing the motor, screw the cover to the base plate with a screw.



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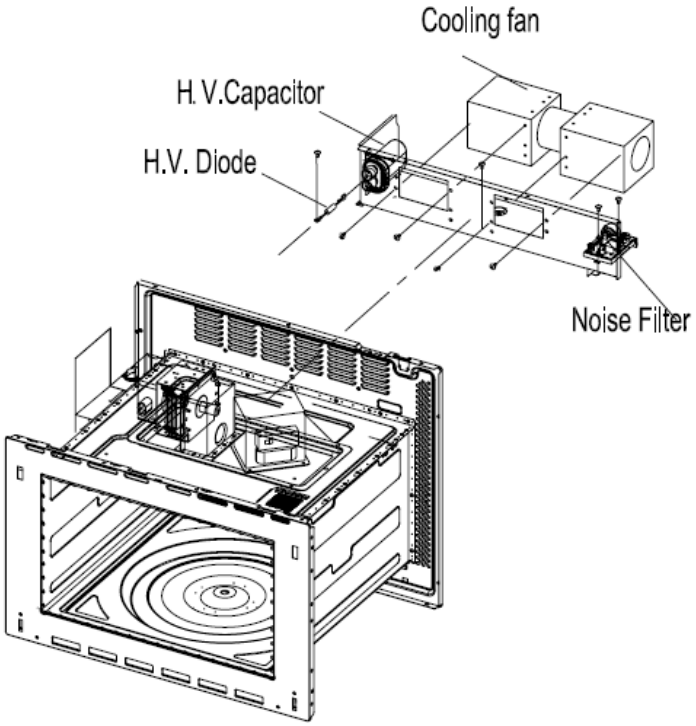
3.4 Removing the cooling fan

1. Remove the housing.
2. Discharge the HV capacitor.
3. Unscrew the H.V. diode.
4. Disconnect the magnetron.
5. Disconnect the fan motor.
6. Unscrew and remove the cooling fan assembly.
7. Unscrew the fan retaining plate and remove in the direction of the structure.



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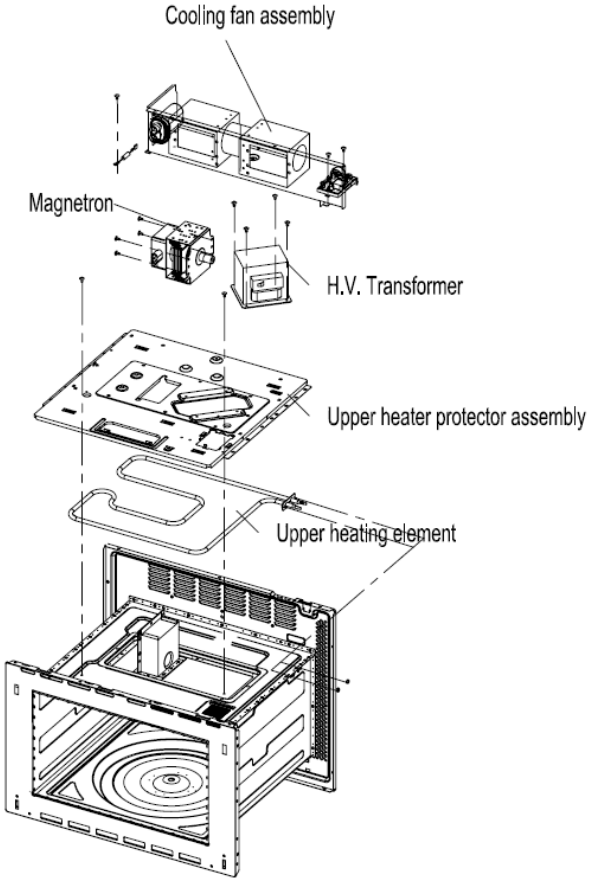
3.5 Removing the upper heating elements

1. Remove the housing.
2. Discharge the HV capacitor.
3. Unscrew the cooling fan assembly, and lift out.
4. Disconnect the magnetron and the H.V. transformer.
5. Unscrew and remove magnetron and H.V. transformer.
6. Disconnect the wiring above the upper heat protector assembly.
7. Unscrew the upper heat protector assembly from the cavity upper plate, and lift out carefully.
7. Disconnect the heating elements.
8. Remove the hex nuts on the right side of cavity and on the upper of cavity.
9. Lift out the upper heating elements from the cavity.



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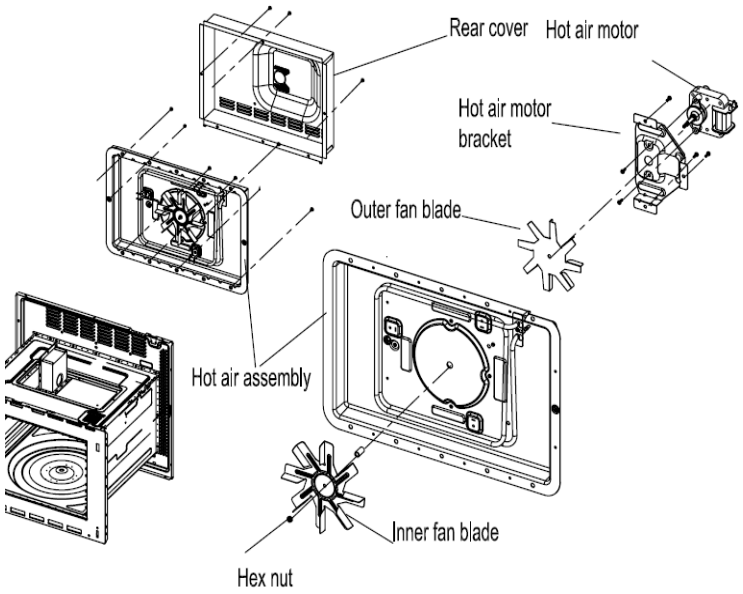
3.6 Removing the hot air motor

1. Remove the housing.
2. Discharge the HV capacitor.
3. Remove the rear cover.
4. Disconnect the Hot air assembly.
5. Remove oven sensor.
6. Unscrew the Hot air assembly and lift out carefully.
7. Disconnect the Hot air motor.
8. Remove the hex nut which attaches the inner fan blade to the shaft of the hot air motor.
9. Pull out the inner fan blade in the hot air chamber.
10. Unscrew the hot air motor bracket.
11. Lift out the hot air motor with the bracket, and remove the outer fan blade.
12. Unscrew the hot air fan motor from the hot air motor bracket.



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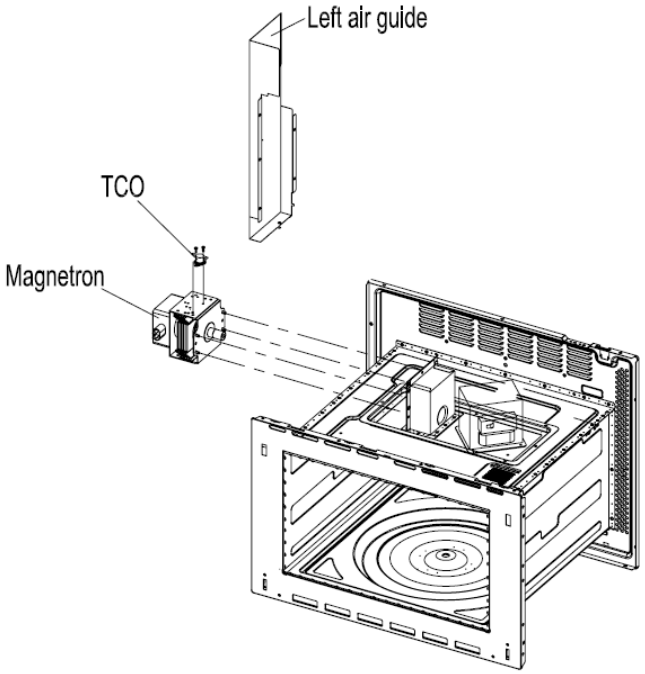
3.7 Removing the magnetron

1. Remove the housing.
2. Discharge the HV capacitor.
3. Remove the magnetron TCO.
4. Disconnect the magnetron.
5. Remove the left air guide.
6. Unscrew the magnetron.

NOTE:

When re-installing the magnetron, ensure that the fastening screws are tightened to prevent microwave energy from escaping. Also ensure that there is no gap between the hollow conductor and magnetron.



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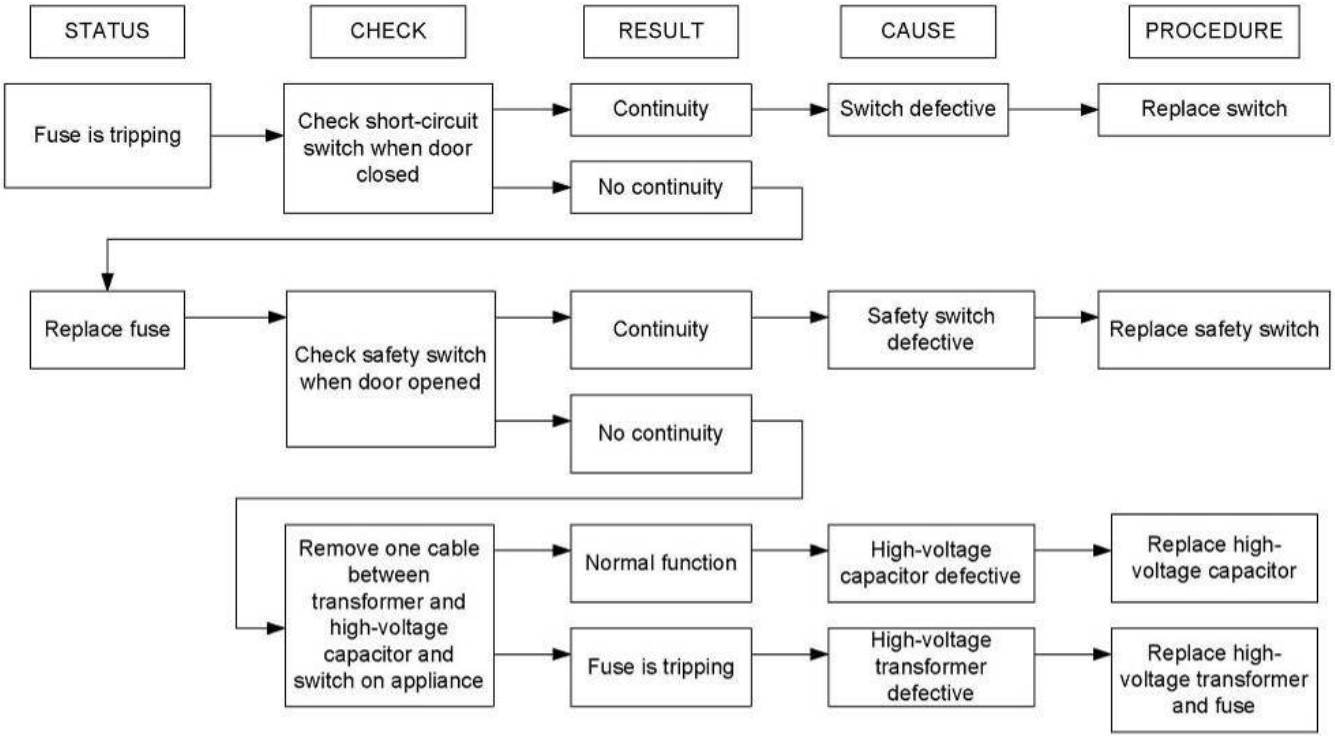
4 FAULT DIAGNOSTICS

4.1 Troubleshooting plan - fuse is tripping

The appliance does not function at all; there are no symbols/numerals on the display and no inputs are accepted.



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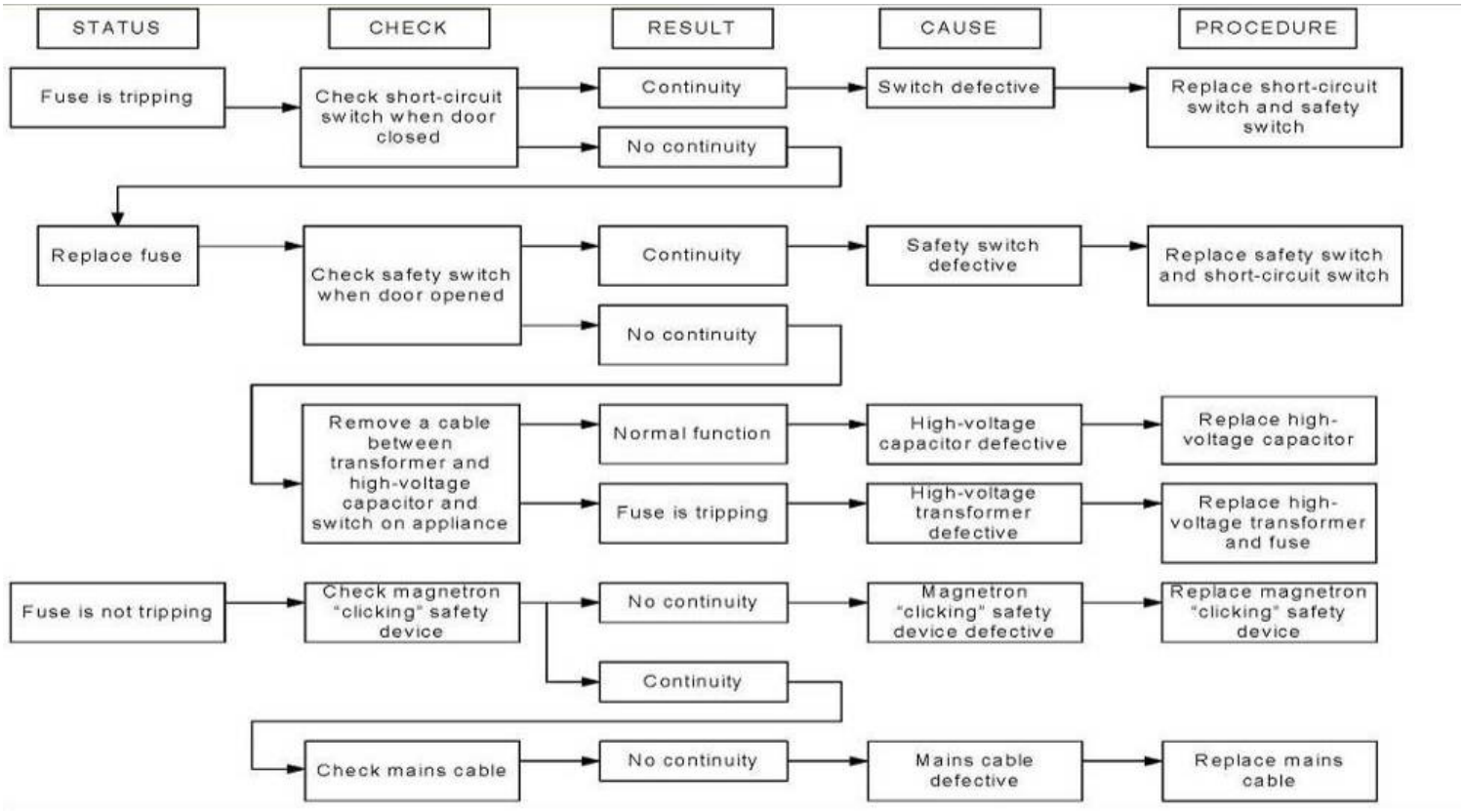
4.2 Troubleshooting plan - appliance does not function at all



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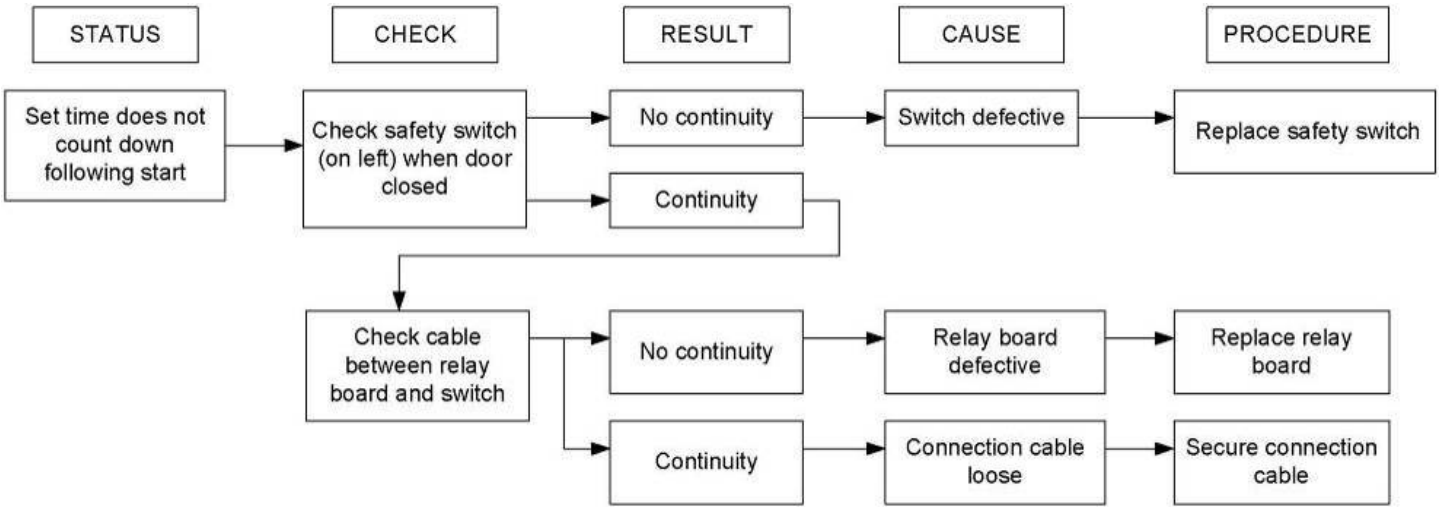
4.3 Troubleshooting plan - appliance does not start



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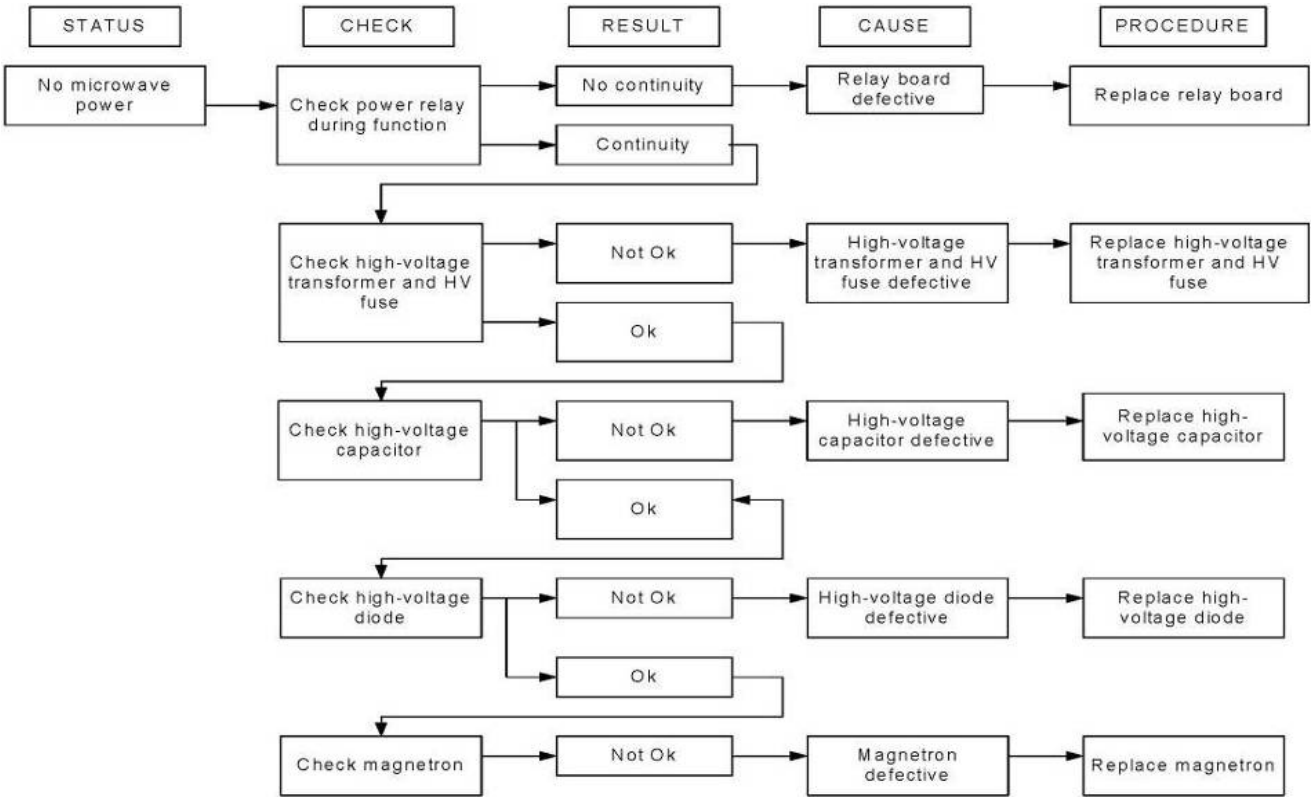
4.4 Troubleshooting plan - no microwave power



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4.5 Troubleshooting plan - input module

The following statuses indicate a potentially defective input module.

1. Display segments incomplete.
   - Segment is missing.
   - Partial segment is missing.
   - Character is flickering (note: slight flickering is normal).
2. Comma/decimal point is not displayed or is flashing.
3. Slight brightness variation of one or more of the displayed numerals.
4. One or more displayed characters do not illuminate.
5. Display does not count down while the time is flashing or does not increase in clock mode.
6. Time display jumps visibly during the countdown.
7. Display counts down too quickly during the cooking process.
8. None of the display symbols is indicated after the cooking cycle has been selected.
9. Time is no longer displayed at the end of the cooking process.
10. No acoustic signal can be heard if the correct button is pressed.

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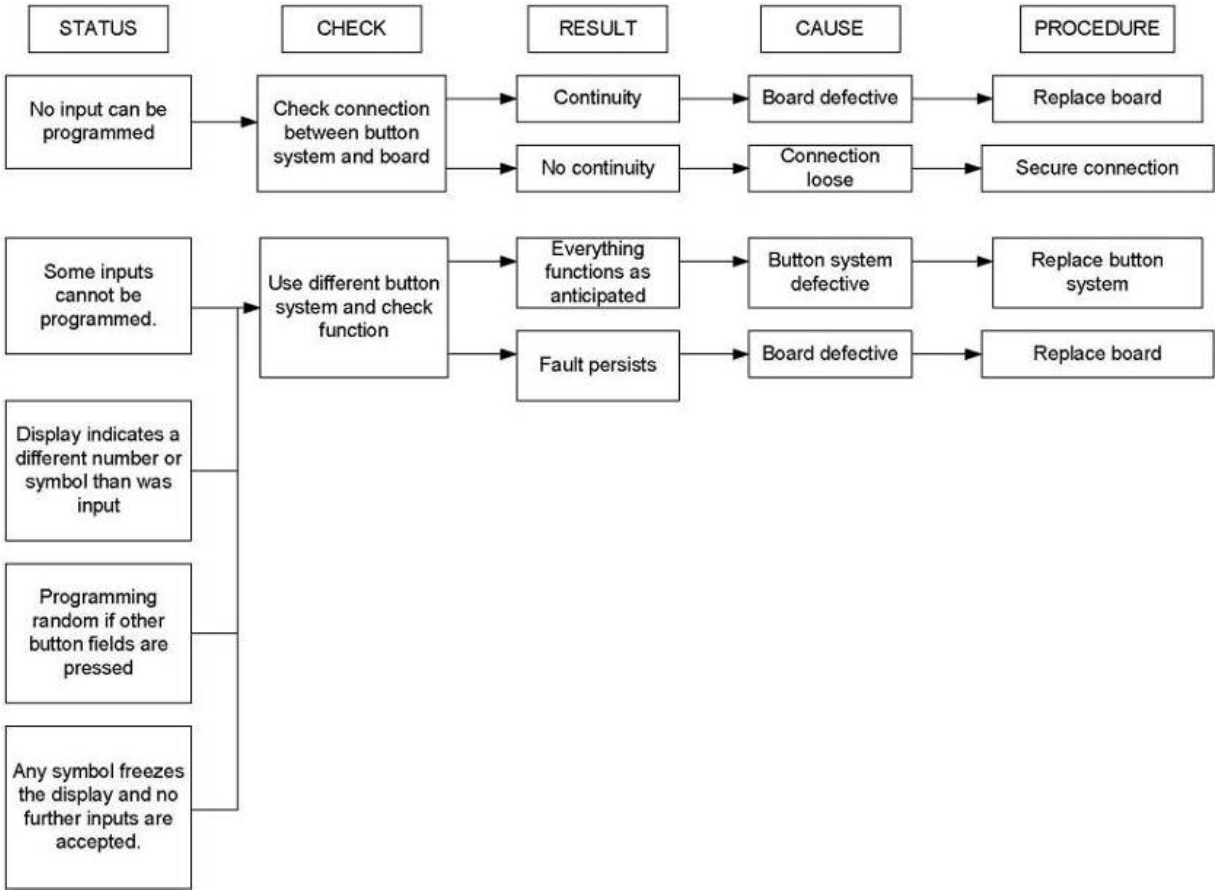

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4.6 Troubleshooting plan - Error Codes of input module.

Error Codes Explaination	
Error Codes	Problems
E 1:	Thermistor open
E 2:	Safety time
E 3:	Damper function failed
E 4 :	Thermistor short
E17 :	Preheat fail (not reached target temperature within 15min).
E 1: Thermistor open: If detected, revert to plug in mode (Display the error code for 3 seconds).	
E 2: Safety time: Safety time was reached, oven is in off condition, until push any button disappear E2	
E 3: Damper function failed: Will detect only after plug-in and will disappear after push any button	
E 4: Thermistor short: If detected, revert to plug in mode (Display the error code for 3 seconds).	
E17: Preheat fail: If detected, revert to clock mode (Display the error code for 3 seconds).	

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4.7 Determining the microwave output power

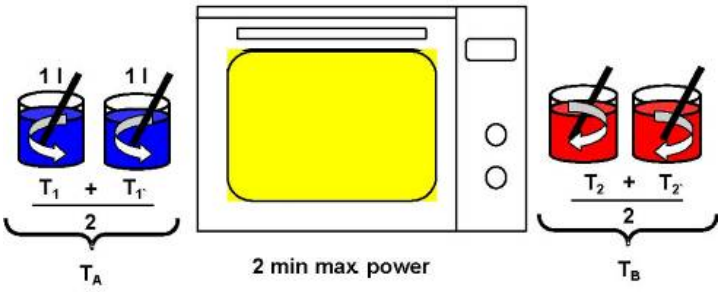
The output power P_{Ab} is determined by heating a specific volume of water (cold tap water).

Required aids:

- 2 microwave-proof utensils, each with a capacity of 1 l.
- 1 thermometer with immersion sensor.

Proceed as follows:

1. Determine the initial temperature (mean value)
2. 2 min cooking time at max. power
3. Determine end temperature (mean value)
4. Calculate temperature difference
5. Calculate output power



$$(T_B - T_A) \times 70 + 100 = P_{Ab}\ [\text{watts}]$$

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